

image signal applied to the display apparatus **1**. In other words, as can be seen from FIG. 6, the dark image **210** may be displayed on the display **20** according to the dimming signal D generated by the dark image signal applied to the display apparatus **1**.

[0121] The controller **140** may store the dimming signal D generated in response to data needed for display of the dark image in the memory **120**. The stored dimming signal D may control the images displayed on the display apparatus **1** to be dark images, or may be used to adjust brightness of the external lighting device **1000** as will be described later.

[0122] As can be seen from FIG. 7, the dimming signals shown in FIGS. 5 and 6 may be successively displayed in the form of a graph. In other words, if the display apparatus **1** receives the image signal needed for display of the bright image or the dark image, the controller **140** may generate a dimming signal corresponding to data needed for display of the bright image or the dark image.

[0123] The image signal received by the display apparatus **1** may include a bright image signal and a dark image signal, and images displayed on the display **20** by the image signal may be displayed as bright images or dark images in real time.

[0124] Referring to the graph of FIG. 7, an X-axis may denote a time axis, and a Y-axis may denote brightness of each image. Dots constructing the graph according to lapse of time may denote brightness of the image signal at the corresponding moment, and dots may denote relative brightness of the images displayed on the display **20**.

[0125] As can be seen from the graph of FIG. 7, the dimming signal may allow image brightness to be changed in real time according to lapse of time, and brightness of the images displayed on the display **20** may also be changed in real time according to the changed dimming signal. If the bright image is displayed on the display **20** and a peripheral region of the display apparatus **1** is dark, the user's eyes are easily fatigued. In contrast, if the dark image is displayed on the display **20** and the peripheral region of the display apparatus **1** is bright, it is difficult to distinguish between light and dark of the displayed images, such that the user may have difficulty in normally and visually recognizing the displayed images. Therefore, there is a need to adjust brightness of the lighting device located in the peripheral region according to brightness of the images displayed on the display **20**.

[0126] FIGS. 8 to 10 are conceptual diagrams illustrating a method for allowing the display apparatus to transmit a generated dimming signal to the external lighting device according to an exemplary embodiment.

[0127] In FIGS. 8 to 10, the scope or spirit of the external lighting device **1000** to be described is not limited to the disclosed shapes, and the external lighting device **1000** may also be applied to all kinds of devices which are located in the peripheral region of the display apparatus **1** and affect brightness and definition (or clarity) of the images displayed on the display apparatus **1**. That is, the external lighting device **1000** may include a standing-type lighting device, a stationary lighting device, and a ceiling-mounted-type lighting device, etc.

[0128] Referring to FIG. 8, the controller **140** may generate the dimming signal B corresponding to data for allowing the display apparatus **1** to output the bright image **200** as shown in FIG. 5, and may transmit the dimming signal B to the external lighting device **1000** through the transmitter **111**

of the communicator **110**. The communicator **110** may be coupled to the external lighting device **1000** by wire or wirelessly, and may transmit the dimming signal B according to the wired or wireless communication scheme.

[0129] In addition, the dimming signal B may not be directly transmitted from the display apparatus **1** to the external lighting device **1000**, and may be transmitted to an external server through the network such that the dimming signal B may be transmitted from the external server to the external lighting device **1000**. The wired or wireless communication scheme for transmitting the dimming signal B has already been disclosed in FIG. 4, and as such a detailed description thereof will herein be omitted for convenience of description.

[0130] Brightness of the external lighting device **1000** may be adjusted by the dimming signal B received from the display apparatus **1**. That is, if the bright image **200** is displayed on the display **20** of the display apparatus **1**, brightness of the external lighting device **1000** may also be increased in response to the displayed bright image. In more detail, if the received dimming signal B relates to the bright image **200**, the amount of current needed to adjust brightness of the external lighting device **1000** may increase, resulting in increased brightness of the external lighting device **1000**.

[0131] Referring to FIG. 9, the controller **140** may generate the dimming signal D corresponding to data for allowing the display apparatus **1** to output the dark image **210** as shown in FIG. 6, and may transmit the dimming signal D to the external lighting device **1000** through the transmitter **111** of the communicator **110**. The communicator **110** may be coupled to the external lighting device **1000** by wire or wirelessly, and may transmit the dimming signal D according to the wired or wireless communication scheme.

[0132] In addition, the dimming signal D may not be directly transmitted from the display apparatus **1** to the external lighting device **1000**, and may be transmitted to an external server through the network such that the dimming signal D may be transmitted from the external server to the external lighting device **1000**.

[0133] Darkness of the external lighting device **1000** may be adjusted by the dimming signal D received from the display apparatus **1**. That is, if the dark image **210** is displayed on the display **20** of the display apparatus **1**, the external lighting device **1000** may enter a relatively dark state in response to the displayed dark image. In more detail, if the received dimming signal D relates to the dark image, the amount of current needed to adjust brightness of the external lighting device **1000** may be reduced such that brightness of the external lighting device **1000** is reduced and the external lighting device **1000** may thus enter a relatively dark state.

[0134] Brightness of the image displayed on the display **20** and brightness of the external lighting device **1000** may be generally established to be proportional to each other, such that the brightness of the image displayed on the display **20** and the brightness of the external lighting device **1000** may be changed according to the proportional relationship therebetween. However, the relationship between brightness of the image displayed on the display **20** and brightness of the external lighting device **1000** may be implemented in various ways according to various embodiments of the present disclosure.